

Dwelling Sites from the Geometric Period, Korea

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EXCAVATIONS in Korea have brought to light a large number of finds from all periods, finds which are as yet poorly known in the west. Many of these are summarized in the Japanese publication *Kankoku no Kokogaku (Archaeology of Korea)* (1972), edited by Jeong-hak Kim of Pusan National University. Sections of this book are being translated by Kazue and Richard Pearson, University of British Columbia, under the auspices of the Canada Council, the Japan Foundation, the Wenner-Gren Foundation, the Asian and Slavonic Research Institute of the University of British Columbia, and the ACLS-SSRC Joint Committee on Korean Research. The following is a discussion of houses from "Neolithic" sites (termed the Geometric Pottery Period) in the northern and southern portions of the peninsula. While it is difficult to establish dates for these sites or to create an internal sequence of occupation, they probably were occupied within a time span from 4000 to 1000 B.C. Settlement data on Korean sites have heretofore been virtually nonexistent; therefore this contribution to Korean archaeology is a particularly unusual one.

Only about ten house sites of the Geometric Period have been excavated and reported. All of these are in North Korea. Few dwellings have been found in the south, despite the discovery of contemporary shell mounds and other kinds of sites. Recently, however, seven dwellings have been found at Amsa-ri, and a report is now being prepared. In the north, three houses are known from Ch'itap-ni, five from Kungsan, one from Sopohang, and one from T'osong-ni. In addition there is word that a dwelling site was recently found in a site at Musan-gun, North Hamgyong Province. However, no details are available.

CH'ITAP-NI SITE

Remains were excavated from inside an earthen castle wall built in the period of the Three Kingdoms. Because of the subsequent castle construction, Yi Dynasty

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and Koguryo remains were found mixed above the surface of the floor. At the very bottom, a Geometric Pottery layer was found.

No. 1 House Site

The upper portion of the pit wall appeared from about 1.2 m below the surface (Fig. 1). A flat area approximately 6.65 m from north to east, 7.35 m from west to south, 7 m from east to south, and 6.7 m from west to north was uncovered.

The floor had been dug out to a depth of 48 to 50 cm from the surrounding soil,

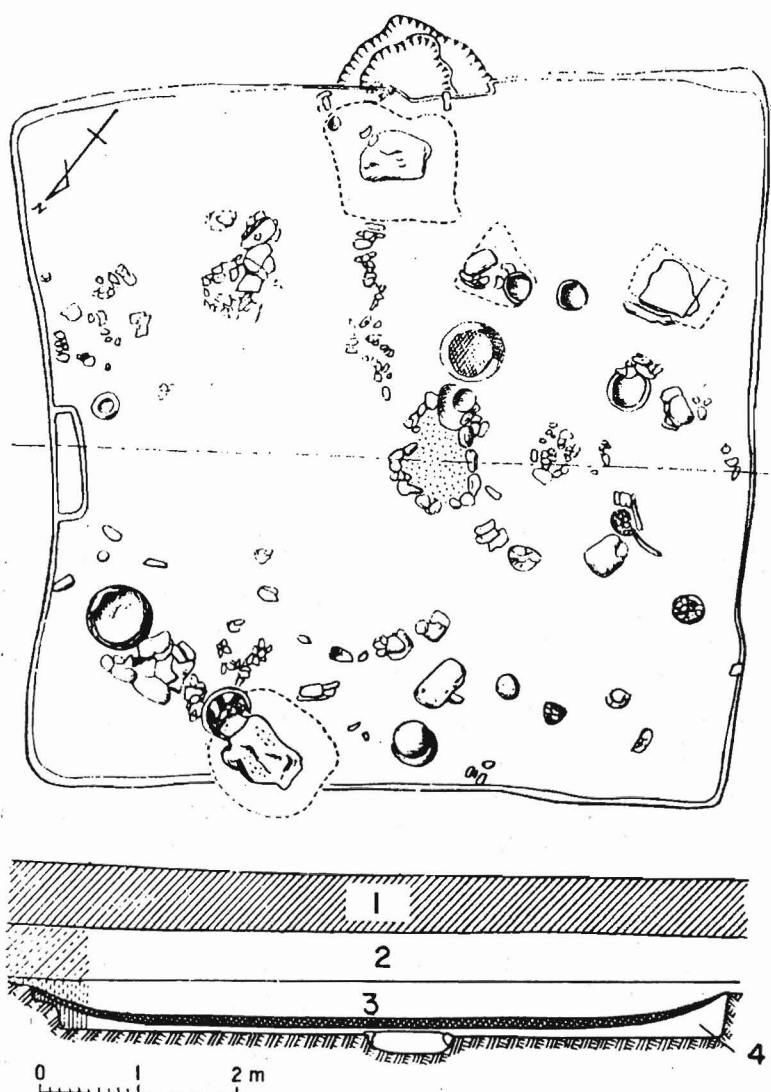


Fig. 1 Floor plan and section of House Site no. 1, Ch'itap-ni site. 1, surface layer; 2, "ancient period" layer; 3, "primitive period" house fill; 4, "primitive period" house.

and the wall and floor areas were strengthened with a layer of clay about 10 cm thick, but 1 m thick on the north wall and 20 cm thick on the south wall.

Judging from the amount of charcoal and ash on the floor, this house pit appears to have been abandoned because of fire. Some long sections of charcoal looked like posts; two charred examples stood on both sides of the entrance, which was on the southeast side of the house. No actual postholes were found; however, from the charcoal, the posts seem to have been placed on the floor surface. There were entrances in the middle of the northeast and southeast walls. At the entrance on the northeast side there was a step 1.1 m in length, 25 cm in width, and 15 cm high, while at the entrance on the southeast side there was a sloping area about 80 cm in diameter.

The artifacts appear to have been left in the same state as when they were burnt. The interior furniture consisted of a fire pit and a storage area. The fire pit was about 15 cm in depth and was surrounded with beach cobbles. A large pottery jar with the bottom removed was buried beneath the beach stones surrounding the south side of the fire pit. It seems that the storage pit was purposely constructed beside the fireplace later to be covered over when the fireplace was enlarged.

The original diameter of the fireplace, before enlargement, was about 80 cm from east to west. The latest fire pit was placed almost in the middle of the house; however, the earlier, smaller fire pit was about 1 m off-center toward the southwest side. It seems that the dwelling may have been expanded about 1 m to the southwest at the time of the expansion of the fireplace. The differences in the thickness of the clay strengthening of the wall may be an indication of reconstruction. The storage jar protruded above the floor level by about 10 cm. Its total height was 42 cm. Two similar storage pits were found on the south side of the fire pit, and one at each side of the entrance. At the bottom of the storage pit near the fireplace, green clay, apparently the remains of rotted organic material, was found. Red sand and ocher were found in another pit.

The largest storage pit, adjacent to the fireplace, contained one fragmentary and two perfect saddle querns, together with some pottery, while the storage pit near the entrance contained more than ten net sinkers. Along the north corner of the floor, two or three large vessels were found upside down, and two or three vessels were found on the northwest and southwest sides. Numerous small vessels were found, some of them lying upside down, and quite a few could be restored. Stone arrowheads, spears, and adzes were unearthed from the east side near the fire pit, and complete saddle querns were placed in a semicircle to the west side of the fire pit. Stone artifacts such as net sinkers were unearthed from around the dwelling pit.

No. 2 House Site

The house pit wall appeared about 1.5 m below the ground surface. The wall enclosed a flat floor surface of hardened sandy earth about 6.4 m in diameter. The general floor area was squarish in outline and the upper rim of the wall was conspicuously wider than the floor (Fig. 2).

The fire pit in the center of the floor was an oval about 1 m in diameter with a depth of 34 cm. It appears that originally the earth was removed and the pit was carefully lined with stones; however, at the time of excavation, the stones were

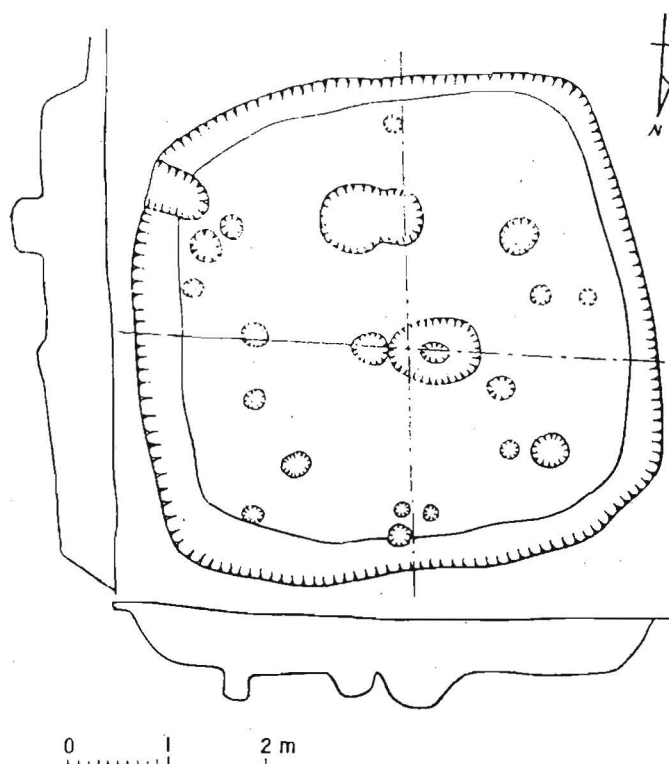


Fig. 2 Floor plan and section of House Site no. 2, Ch'itap-ni site.

lying in the pit. From the fire pit, fragments of half-completed stone tools and hammerstones were found.

No clear remains of storage pits such as were found in House Site no. 1 could be seen; however, some traces were found along the side of the fire pit.

Many holes of various sizes were found in the floor of the dwelling pit, primarily on the northwest and southwest sides. A number of them appear to be storage pits. On the southwest side, some of the pits were about 47 cm deep, while the others were about 15 cm deep. Five of the pits ranged near 20 cm in diameter. Three were located inside the east wall at equal intervals (depth was 20 to 30 cm), while one was near the center of the north wall and the last one was near the northwest side of the fire pit (depth about 15 cm). These vertical pits seem to have been dug for posts. A final group of nine holes had diameters of about 15 cm. Four were located near the wall, while the rest were away from the walls toward the middle of the house. Some of these must be postholes, while others are probably depressions made for placing flat or pointed bottomed pots on the floor.

Two steps of less than 50 cm in width led to the floor from the entrance, which was in the southeast corner. Stone artifacts were found to the west and north of the fire pit, while from the opposite side, the south and east, ceramics were recovered. A line from the southeast to the northeast corner of the pit almost perfectly indicates the distribution of stone tools and ceramics. Stone spades were found primarily on the top of the north, south, and west walls; these must have been left on the edge

of the pit, under the low eaves. Generally the distribution of artifacts seems to indicate that manufacturing took place on the west side of the fire pit, while the north side was a work area. Ceramics were placed on the east and south sides, and tools, such as spades, were placed on the edge of the pit.

In the southern area of the floor, two long, oval-bodied vessels were buried upside down, side by side, in an east-west direction. The mouth diameters were 42 cm and 32 cm and the height of the smaller example might be reconstructed to be 41 to 42 cm. These jars were buried completely under the floor and were filled with soil. They appear to have contained some organic matter. From the larger jar, a bone fragment and some disintegrated bone was found. The meaning of these jars is not yet clear.

No. 3 House Site

The surface of the house pit appeared 1.8 m below the present ground surface, and the floor appeared 30 to 35 cm below the first signs of the wall edges. The floor area is between square and circular and was covered with clay. The remains of a fireplace were found in the center. The northeast and southeast walls are both about 3.2 m in length, while the northwest wall is 3.8 m and the southwest wall is about 4 m.

The fire pit is an oval, elongated from north to south. It must have been surrounded with stones, although none can be found now. Overlapping the fire pit on its southeastern side was a fire pit about 60 cm deep and 60 cm in diameter. There seems to have been another pit on the north of the above-mentioned pit that overlaps the fire pit on its eastern side. The original diameter might have been almost 60 cm. The upper pit was 20 cm deep; a second pit of 30 cm diameter was dug into the large pit, the two sharing one wall. The depth of the common wall was 50 cm and the depth of the opposite wall was 30 cm. The larger pit of 60 cm in diameter and depth seemed to be a storage pit in which the upper parts of large jars had been buried upside down to form a lining. The double pits must have originally been used for the same purpose.

In addition to these pits there were twenty holes on the surface of the floor; seven of them had diameters of 20 to 30 cm while the rest had diameters of about 10 cm. The depth was 15 to 20 cm; some were slanting holes under the walls, while others were vertical in cross section. The slanted holes were concentrated in the east, west, and south corners.

The holes near the walls may or may not have been for supporting the vertical posts inside the house.

The entrance, once again in the southeast, was marked by two steps. The height of one was 15 cm and the width was 10 to 15 cm.

THE KUNGSAN SITE

To the southwest of Pyongyang is a line of hills less than 100 m above sea level. To the south of Kungshan (the larger hill), the lower hill, about 20 m above sea level, is called Sokungshan; the site is on its southeastern slope. The site is a shell mound containing a shell layer of about 30 cm in thickness, lying about 20 cm below the ground surface. Below the shell layer five dwelling pits were found. In addition

to these, there were a number of deliberately excavated fire pits; however, their relation to the house sites could not be ascertained.

No. 1 House Site

The floor surface is an asymmetrical circle about 5.7 m in diameter. Its depth was 1.3 m to 2 m. The floor surface was treated with a thin layer of clay applied over a weathered surface of hard red granite. There was a fire pit as well as a storage pit constructed by placing a pot upside down on the floor surface. Postholes were arranged in a circle around the edge of the pit. The fire pit was oval in shape and about 30 cm deep, and was surrounded with chipped fragments of saddle querns. One of them was perforated with a cone-shaped hole, suggesting that it may have been part of a fire-starting kit. A Geometric vessel having a portion of the bottom removed was placed in the storage pit, the bottom of which was covered with a hard green-colored clay layer about 5 cm thick. It clearly appears to be coagulated organic material. Twenty-one postholes of various sizes were discovered. Most of them slanted toward the interior of the house. Regardless of the diameter, the depth seemed to be 10 to 21 cm. The diameter of the posts ranged from over 20 cm in four instances to 10–15 cm in the remaining cases. The total depth of the house pit was 1.2 to 1.3 m; from the inward slant of the postholes, it would seem that the dwelling had a cone shape.

No. 2 House Site

This house was found beneath a shell layer 70 cm thick. Another shell layer of a different period extended beneath the dwelling. Part of the pit was destroyed, but the intact southeast wall surface was rounded, suggesting that the house form was circular. The clay floor surface was mostly eroded into the shell layer beneath.

There was a fireplace in the center and a few postholes remained around the central depression. The fireplace had a square shape, and it was surrounded by a ridge of burnt clay 5 to 15 cm wide and 10 cm high; the ash was piled up to a depth of about 13 cm. There were seven postholes, one of them being more than 20 cm in diameter, while the rest were less than 10 cm. Most of the postholes in this particular house had washed away because the floor was in a shell layer; the postholes that remained were vertical in cross section.

No. 4 House Site

This site was situated on weathered granite (Fig. 3). It had an irregular round shape. The south wall has been destroyed since it overlaps with House Site no. 3. The depth was 58–95 cm. Although it is incomplete, it seems to resemble House Site no. 2. A clay layer about 5 cm thick was spread on the floor surface. In the center there was a fireplace and storage pit with a large pottery vessel turned upside down. The fire pit was round and seemed to be surrounded with natural stones the size of bricks, two of which still remained. The storage pit beside the fireplace was the same style as that of House Site no. 1; however, there was a stone slab placed over the pottery vessel. The inside was filled with earth and a green clay layer about 5 cm thick was found at the bottom.

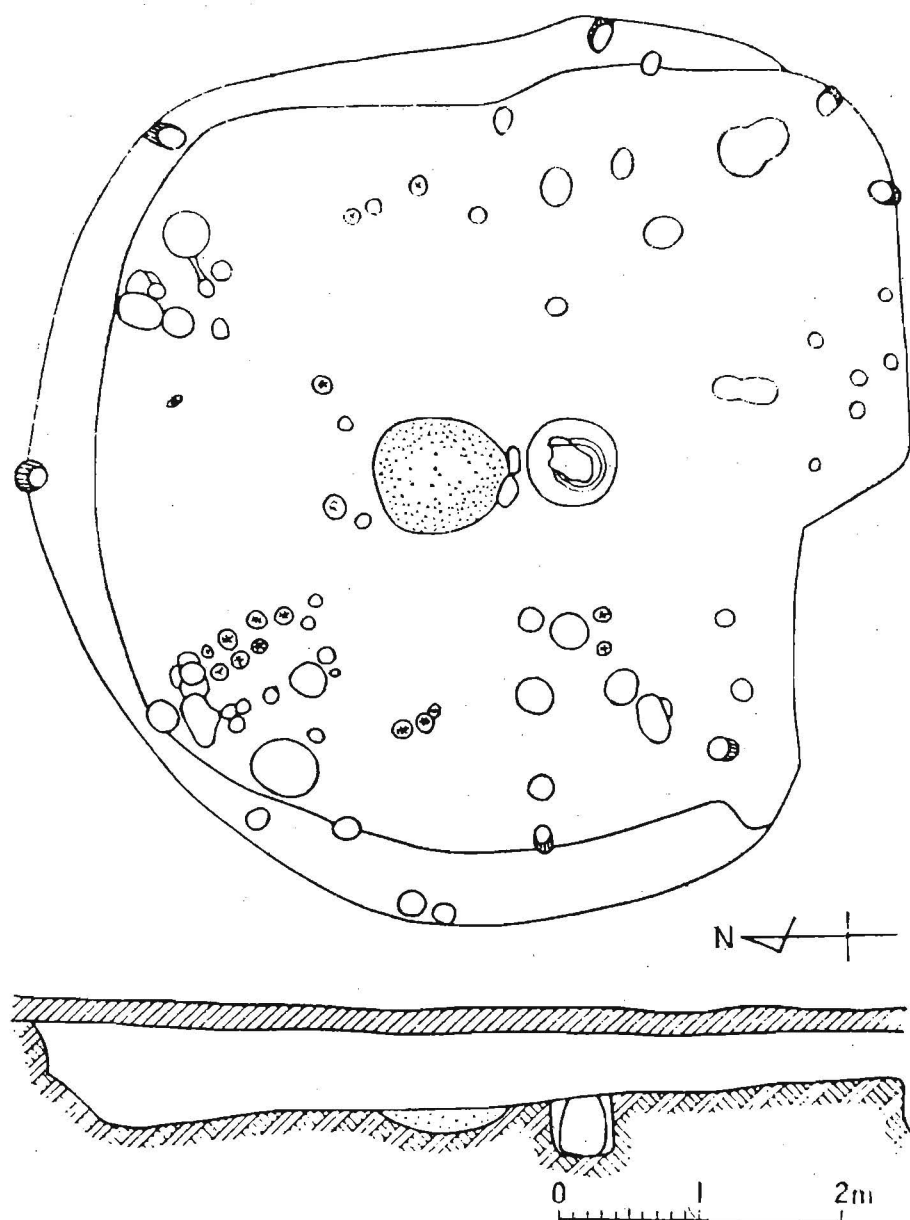


Fig. 3. Floor plan and section of House Site no. 4, Kungsan site.

The floor surface of the house had more than eighty depressions; about half of these were shallow—between 5.4 and 10 cm in depth—and seemed to be places for setting round or pointed based pottery vessels. These were more numerous on the northeast portion of the house. A large depression was noted in the northwest portion of the house floor. It seems to have been used for setting down a large vessel. Its diameter was 40 cm and the depth was 40 cm. From this size it seems unlikely that it could have been used as a posthole.

The postholes were larger than 10 cm in diameter. More than ten of them were larger than 20 cm in diameter and the rest were less than 15 cm in diameter. Three of them were as large as 40–50 cm in diameter. Sometimes there were two to three pebbles in the large holes of more than 20 cm in diameter; these might have served to prevent the posts from working their way deeper into the soil. These postholes were generally round in outline and vertical in cross section; however, eight of them were slanted inward. They seem to represent a transition form from the cone-shaped dwelling to the cylinder-walled Mongolian *pao* dwelling. The slanting post moulds seemed to be holes left by poles which support the vertical posts.

No. 5 House Site

This house pit is square in form although the east and west walls are slightly curving. It might be said to show a transition from the round to the square dwelling form. The depth of the house pit was 70 cm, and it appears to be semisubterranean (Fig. 4).

Along the central part of the northeast wall of the pit there was a clay layer, which may have marked the entrance. Its height from the floor surface was about 30 cm, the length was 1 m, and the width was 40 cm. The fire pit was slightly off the center toward the southwestern portion of the floor surface. The fire pit had an oval shape and was surrounded by a burnt clay area of 5–20 cm in width, and there was a shallow hollow of less than 5 cm in depth beside the fire pit. It probably served as a secure place to set a pottery vessel.

The postholes were arranged in a circle of 3 m in diameter centering on the fire pit. There were eleven postholes, and some of these were in the entrance and exit area of the northwest side. Many of them were extremely small in diameter; five were approximately 8 to 10 cm in diameter, while six had diameters of only 5 cm. Three posts had diameters of less than 30 cm, including the post beside the fire pit.

Variation in depth ranged from 10 to 35 cm, while the average was 15 cm. The postholes were all vertical and seemed to indicate a cylinder-shaped Mongolian *pao* dwelling. (The reporter mentions that one complete and eleven partially completed stone arrowheads were unearthed from the floor of House no. 3. However, no description has been provided for other artifacts from the dwelling sites of Kungsan.)

SOPOHANG SITE

The village of Sopohang is about 20 km northeast of Unggi station along the coast. It is located in the extreme northeast of the peninsula. Beyond the mountains behind the site lies the Soviet Maritime Province. The shell mound, more than 100 m long and 40 m wide, is located on a low hill to the north of the village. This shell mound contains two cultural layers; the upper one contains plain pottery, while the lower layer belongs to the Geometric Culture. In the upper layer two house sites were found. It is also said that Palaeolithic structures and remains occur beneath the two layers mentioned above.

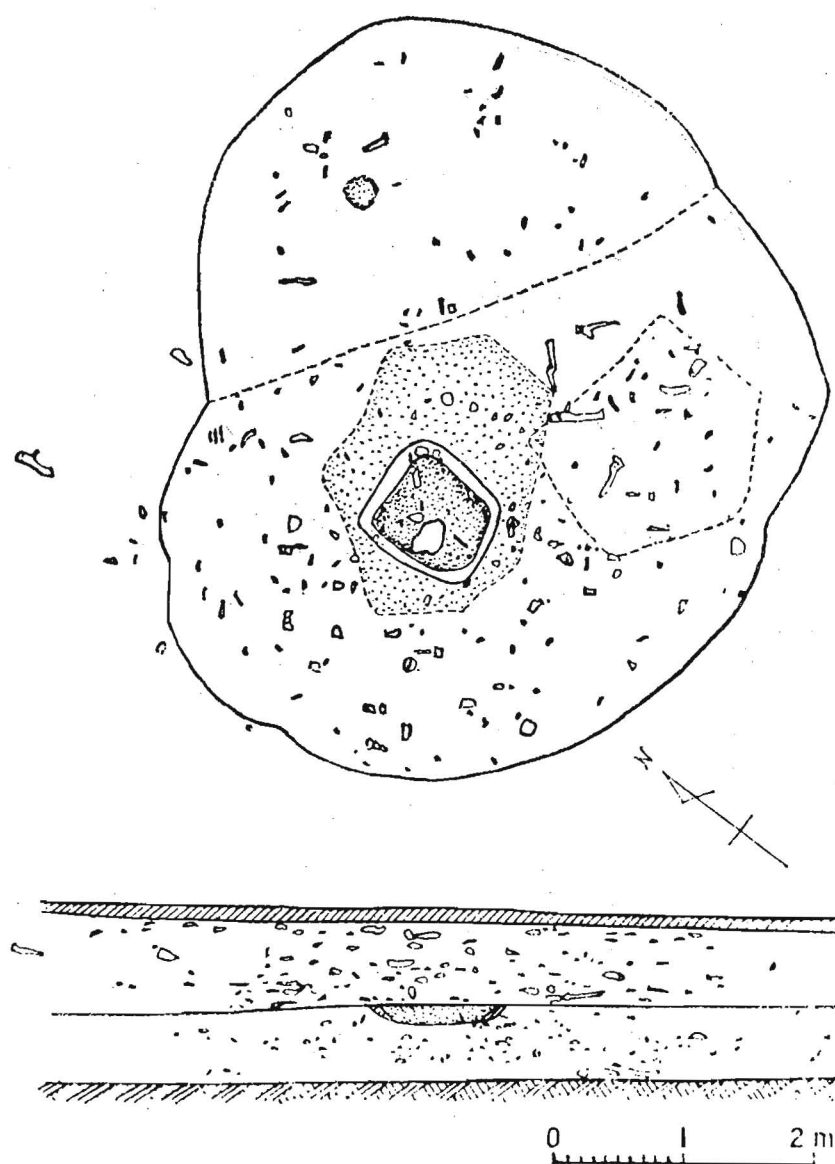


Fig. 4 Floor plan and section of House Site no. 5, Kungsan site.

No. 3 House Site

The upper portions of this pit house appeared about 2 m beneath the present surface, and the floor surface appeared at a depth of about 2.7 m. House Site no. 3 was a circular semisubterranean dwelling, the floor of which was made by covering the shell layer with a thin layer of clay; after it was fired, it assumed a hard consistency, particularly with the admixture of shells (Fig. 5).

The postholes were arranged at 0.7 to 1.2 m intervals in a circular configuration;

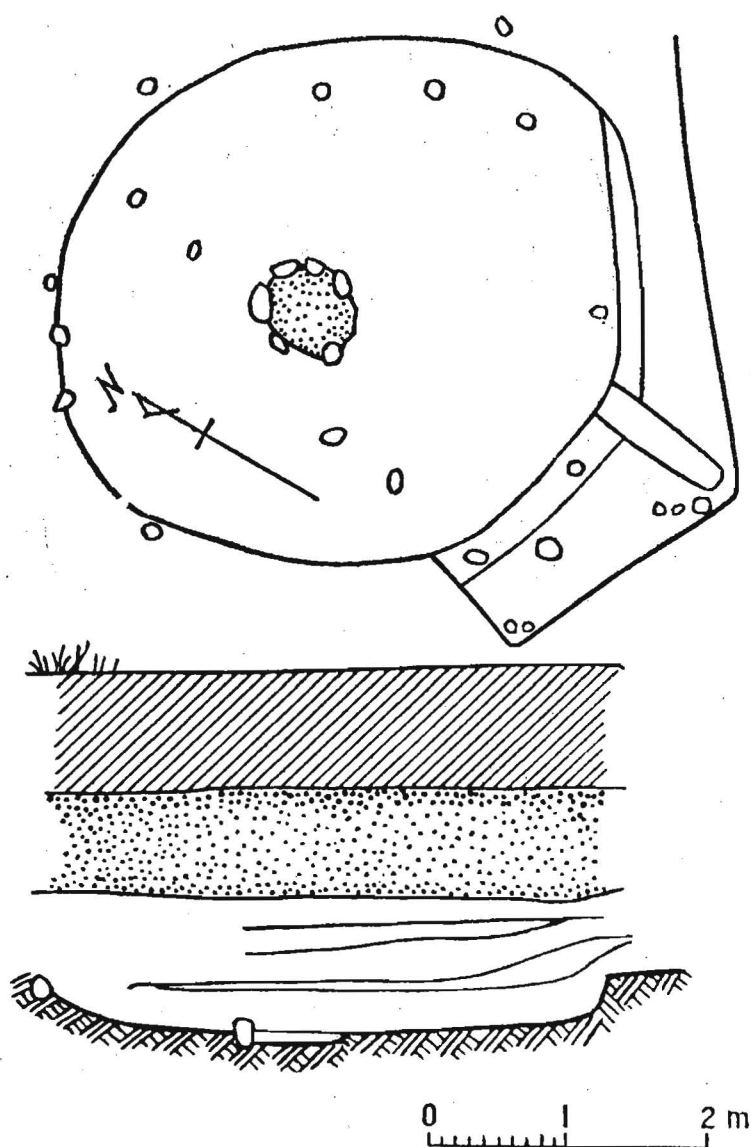


Fig. 5 Floor plan and section, House Site no. 3, Sopohang site.

however, on the north side there were four holes in a straight line. Since no other area appears to have been used for the entrance and exit, this area must have been used for that purpose. Most of the postholes were of similar sizes; however, a few were about twice as big as others. In the center of the floor was an oval fireplace surrounded with stones.

From the floor surface and layers within the pit, many plain sherds, stone adzes, arrowheads, net sinkers, and artifacts were found. There were many deer antlers and dog skulls on the floor surface.

T'OSONG-NI SITE

This site, located in a castle structure constructed of earth and stone during the Yi Dynasty, lies north, south, and west of the village of T'osong-ni in the valley of the Amnok River about 36 km from Chunggang County. In the vicinity there were stone mounds of the early Koguryo, other old sites, and scattered modern artifacts and ceramics. Four dwelling sites were found; three of them belonged to the Plain Pottery Period.

No. 2 House Site

The walls around the pit and the floor surface of this rectangular semisubterranean house retained traces of burning. Around the central oval fire pit were five long stones. Broken Geometric vessels, which appeared to be restorable, were found in the southwestern and southeastern corners. A few sherds with vertical designs and some adzes, arrowheads, and obsidian flakes were also found on the floor. The inhabitants of this house appeared to have used Geometric Pottery.

The house sites covered above are summarized in Table 1. In the reports, it was mentioned that House Site no. 1 preceded House Sites 2 and 3 at Ch'itap-ni and that the latter were almost of the same period as those of Kungsan. T'osong-ni House Site no. 2 seems to me to be the latest, to judge from the house shape and the associated artifacts. Sopohang House Site no. 3 was placed in the middle of the table for convenience, since its chronological position is uncertain.

GEOMETRIC PERIOD HOUSE SITES: AN OVERVIEW

Location

It is difficult to draw any firm conclusions about the factors affecting the location of dwellings from the nine examples given above; however, the following points seem to be clear. The settlements of Ch'itap-ni and T'osong-ni were found either in the areas of earthen walls or in the flat areas, while Kungsan and Sopohang were found on the slopes of low hills. In addition, the settlement of Wonbong-ni was also on the slope of a hill. The sites which are covered with later earth walls were definitely on sloping ground. Generally we can say that settlements of this period were built not on flat damp areas, but on somewhat elevated, well-drained ground. However, shell mounds and artifacts are often scattered in low areas along the seacoast or riverbanks.

Looking at the stratigraphy of dwelling sites, one can conclude that the matrix consists of mostly weathered granite or sand layers; however, some settlements, such as Kungsan or Sopohang no. 3, were built on shell layers. House pits were usually dug into earth which was relatively stable. However, sometimes they were constructed on cultural deposits such as shell layers; the inhabitants did not seem to avoid such unstable ground even though modern people would hesitate to use any location other than one which had appropriately stabilized soil.

The Nature of Houses

In floor plan, the house pits are mostly round or close to round. The square form was found in Ch'itap-ni House no. 1 and the rectangular shape was found in

TABLE 1. DWELLING SITES

ATTRIBUTES	Ch'itap-ni			
	no. 1	no. 2	no. 3	no. 1
Location/ Configuration	flat area within (later) earth walls	near (later) earth walls	near (later) earth walls	slope of small
Soil Type	sand layer	sand layer	sand layer	surface of weathered gra
Pit Houses				
<i>shape</i>	square	roughly circular	rounded square	circular
<i>size*</i>	each side ca. 7	6.4 diam	ca. 3.5 diam	5.6 to 5.8 dian
Depth*	0.4	ca. 0.55	0.3-0.35	1.2-1.3
Fire Pits				
<i>location</i>	center	center	center	—
<i>shape</i>	oval	oval	oval	oval
<i>size</i>	N-S axis 1-1.2	E-W axis 0.9	N-S 1.1, E-W 0.9	length 0.9, widi
<i>depth</i>	0.15	0.34	0.2	0.3
<i>sides</i>	stones	stones	stones	stones
Entrances/Exits				
<i>number</i>	2	1	1	1
<i>location</i>	SW, NE	SE corner	SE side	SW side
<i>type</i>	ramp, steps	steps	steps	ramp
Postholes				
<i>number</i>	—	5 + x	26	21
<i>type</i>	—	vertical	vertical, slanting	vertical, slantir
Storage Pits				
<i>number</i>	5	3	1	1
<i>location</i>	side of fire pit, also near entrance, also S side	side of fire pit, also SW and NW sides	side of fire pit	side of fire pit
<i>size</i>	mouth diam 0.65, height 0.42, mouth 0.42, 0.45, height 0.5	diams 0.35, 0.4, depth 0.15, 0.47, 0.15	mouth diams 0.6, depth 0.6	diam 0.44, height 0.5
Fire Damage	burned	—	—	—
Main Artifacts	quern, net sinkers, arrowheads, spears, adzes, pottery	stone spades, hammers, unfinished stone artifacts, pottery		

* All size and depth figures are in meters.

GEOMETRIC POTTERY PERIOD

SITES				
Kungsan		Sopohang		T'osong-ni
	no. 4	no. 5	no. 3	no. 2
small hill	slope of small hill	slope of small hill, on small terrace	slope of small hill	flat area within (later) earth walls
layer	surface of weathered granite	clay layer	shell layer	sand layer
	circular 6.2 diam	rounded square NE wall 2.7, S wall 4.4, center 5.2	circular 4.2 diam	rectangular N-S 6.8, E-W 5.0
	0.6	0.7	0.7	0.25
	center circular diam 0.85	slightly to SW oval N-S 1.0, E-W 0.7	center circular diam 0.5	center oval N-S 0.6, E-W 0.5
	—	0.35	—	—
	stones	clay	stones	stones
	—	1	—	—
	—	NE side	—	—
	—	steps	—	—
	28	14	—	—
	vertical, slanting	vertical	vertical	—
	1(1)	(3)	—	—
	side of fire pit (NW side)	side of fire pit and under wall (2)	—	—
	mouth diam 0.4, depth 0.4	diam > 0.3, depth 0.1-0.35	—	—
	—	—	—	burned
			adzes, arrowheads, net sinkers, bone artifacts, pottery	adzes, stone hoes, net sinkers, weights, obsidian flakes, pottery

T'osong-ni House no. 2. Five of the houses had round floor plans, and Kungsan no. 5 had a round upper rim with square floor space. Kungsan no. 5 seems to show a transitional form between round and square; at the time of its construction it seems that the round shape was predominant and rectilinear forms were rare.

The writer of the Kungsan report mentioned that the round house pit was older than the square house pit; however, I doubt that the answer is so simple. Ch'itap-ni no. 1 is the earliest of the house sites we have considered, and yet it has a square shape. It is not feasible to discuss this problem with only one example, however, the traditional shape (except for T'osong-ni no. 2, which was rectangular) shows an outcurving in the middle portion of the wall, while Ch'itap-ni no. 1 has walls which show incurving in the middle portion.

In Japan, Early Jomon house pits were square, or rectangles that were nearly square, while round pits occurred after the middle of Jomon. In China, at the Yang Shao Culture site of Pan P'o, square, rectangular, and round pits were reported to have been found together. I cannot give many details because I have not read the report fully; however, in certain areas square or rectangular dwelling sites were found beneath round houses. Therefore it is difficult to assume that the round-shaped house form is older than the form of the Geometric Period, and the sequence might in fact be the reverse. However, T'osong-ni no. 2 should be considered in terms of the relationship of rectangular dwelling forms to the Plain Pottery Culture.

Size of Houses

The round or nearly round house forms were all less than 6 m in diameter, with the exception of Ch'itap-ni no. 3 and Sopohang no. 3. While the depth of the pits varies, most of them were more or less 60 cm deep. The shallowest example, T'osong-ni no. 2, was 25 cm deep, and the deepest, Kungsan no. 1, was 120 to 130 cm deep. There seems to have been no rigid standardization about the depth of the house pits; rather, they were dug to a reasonable depth depending on the situation.

In the *Han Shu*, a record of a much later period, there is a suggestion that the I-lou preferred deeper pit dwellings.

In the site reports mentioned above, pit houses were divided into two categories: subterranean and semisubterranean. Only Kungsan no. 1 was considered a true pit dwelling; the others were considered to be semisubterranean sites. In his *Primitive Archaeology*, Yu-ho To made a somewhat ambiguous distinction between the two forms depending on whether the whole dwelling wall was below ground level. However, it is very difficult to determine how far the walls extended above the edge of the pit. Kungsan no. 1 was constructed with a house pit which is 1.2 to 1.3 m deep; but there is no clear proof that the walls did not extend above the ground surface. There was also a slanted hole on the upper edge of Kungsan no. 4 which may have been left by a rafter; this would mean that the walls of the house would have been below the level of the earth. Yet the reporter terms this house semisubterranean. I would define the pit dwelling as one which has its eaves on the earth surface, whereas a semisubterranean pit house would have an area of clearance between the eaves and the ground surface. If we use this kind of division, then the pit houses are shallow. From this point of view I would consider all the dwelling

sites of this period to be pit dwellings. The reporter of the Ch'itap-ni Site mentioned that a stone spade had been placed under the lower eaves in House no. 2. However, if the eaves came directly to the ground surface, the spade could only be picked up from the outside of the house if a hole were left in the roof, which does not seem to be very practical. It seems rather that the upper rim of the house pit served as a shelf, located immediately under the eaves.

House Floors

The surface of the floor was spread with clay, and even in cases where the clay was absent, the floor was extremely hard. One would expect that the floor would be naturally hard, if people lived on it for a long time. In the case of Sopohang, however, the floor was deliberately hardened by heating, possibly because there was a soft shell layer under it. An application of clay to the floor seems to have been the general practice.

House Pit Furnishings

Within each house, of absolute necessity, was the fire pit. There was also an entrance/exit facility, and a storage pit. The postholes were not actually furnishings; they are however included here.

The Fire Pit

All of the fireplaces, or hearths, were located in the center of the floor surface except for Kungsan no. 1, in which the location of the fire pit was not clearly recorded. The fire pit of Kungsan no. 5 was located slightly to the southwest of the center; however, it still followed the general pattern.

The pit forms were mostly oval, which seems to be the general shape for the period, except for the square shape of Kungsan no. 2 and no. 3 and the round shape of Sopohang no. 3. In most cases, the long axis was oriented from north to south, except for Ch'itap-ni no. 2 and no. 1, which were oriented east and west.

The fire pit was dug slightly into the floor with the central part being deepest; the depth varied from 15 to 35 cm. However, one cannot determine from the report whether the depth was measured from the stones surrounding the pit or from the floor surface. In many cases the surrounding stones were missing; therefore the depth should be taken from the floor surface. In some cases, however, the depth of the fire pits became the depth from the stones protruding from the edge of the pit. However, in the case of Kungsan no. 2 the clay wall (height about 10 cm) was used instead of the stones, and there was an accumulation of ash inside the fireplace of about 13 cm. The actual fireplace depth is not recorded clearly. The edges of the fire pits were usually surrounded with stones, except in the cases of Kungsan no. 2 and no. 5, which were surrounded with clay.

Entrances

All dwellings have an entrance or exit. These could be recognized in five dwellings: Ch'itap-ni no. 1, no. 2, no. 3, and Kungsan no. 1 and no. 5. Ch'itap-ni no. 1 had two places for entrance and exit.

There were two forms of the entrance/exit; one was constructed of steps coming out from the wall while the other was in the form of a sloping ramp extending from the wall. Ch'itap-ni no. 1 had both forms, while Kungsan no. 1 had only the sloping ramp; the rest of the houses had steps.

The location of the entrance and exit does not seem to follow any definite rules. Ch'itap-ni no. 2 and no. 3 had entrances on the southeastern side of the house pits, while that of Kungsan no. 1 was on the southwestern side. The entrance to Kungsan no. 5 was on the northeastern side. Ch'itap-ni no. 1 had steps on the northeastern side and a slanting ramp on the southwestern side. In many cases, the southwestern and southeastern sides seem to have been preferred. There seems to have been great flexibility depending on the house pit location and the local environment; however, people may have considered the factor of daylight in selecting the southeast or southwest.

Postholes

Holes in the floor, of varying sizes, must have been for supporting posts. No holes were found in Ch'itap-ni no. 1 or T'osong-ni no. 2. There were carbonized wood fragments on the floor surface of Ch'itap-ni, however, suggesting that posts were set on the floor. It should be borne in mind that the original reports do not make any specific reference to the lack of postholes.

The size and number of the postholes vary. The largest, from Ch'itap-ni no. 3, has a 30 cm diameter, while the smallest has a diameter of 7 cm (Kungsan no. 5). The greatest number were 10 to 20 cm in diameter and 10 to 20 cm in depth. The number of postholes ranges from forty of various sizes, in Kungsan no. 4, to about ten. The postholes were both vertical and slanting in cross section. In no case do the postholes consist only of the slanting type.

The postholes were usually arranged in a circular pattern on the floor. The writer of the Kungsan excavation report has attempted a reconstruction of the pit-dwelling form according to the layout of the postholes. According to him, Kungsan no. 1 must have had a cone shape, from the slanting holes around the pit, while Kungsan no. 4 displayed a form transitional from the Mongolian dwelling style to the cone shape. Kungsan no. 5 was a cylindrically shaped Mongolian *pao*-style dwelling, judging from the shape and configuration of the postholes.

Actually, I do not know exactly what is meant by the cylinder-shaped Mongolian-style dwelling; however, in the publication *Primitive Archaeology* by Yu-ho To, the Kungsan dwellings are described in the following way: "Kungsan no. 1 was as deep as 120 to 130 cm, and all of the postholes were slanted inward; therefore the dwelling form looked like a cone, with no interval between the roof and the walls." Also, To writes, "This kind of cone-shaped tent style dwelling still remains in the northern part of this continent." In the cone-shaped dwelling, the posts also serve as rafters. Although To states that this type of house still exists in the northern part of the continent, I have never heard of this kind of structure occurring in a deep pit, and would wonder if it is actually feasible. The efficient area of the inside would be very small; in addition, rainwater would drain from the edge of the roof directly into the pit. Actually, any kind of pit dwelling with a round floor plan, with rafters which come close to the earth, will look cone-shaped from the outside. The report is

so brief that I cannot tell the degree of slant or the correct arrangement of the posts, in order to determine the configuration of the roof.

I am not exactly sure what is meant by the Mongolian *pao* dwelling. As I have mentioned earlier, the early pit dwellings had a cone-like appearance from the outside; however, from the inside the walls were vertical or nearly so with an umbrella-like roof set up on posts. However, the Mongolian *pao* dwelling was knitted together with fine, flexible materials, and was covered with a tent. It did not have posts, and the roof was in the shape of an arch, without eaves. The more stationary form of this dwelling had an earth wall and a roof with extremely short eaves. It seems that unless the roof extended over the edge of the dwelling pit, there would be problems created by the flow of water into the pit. Therefore the roof must have extended to the edge of the pit, and the existence of the Mongolian *pao* seems unlikely.

Of particular interest is the fact that in the dwellings of later periods, there are no small postholes placed around the walls at 30 to 40 cm intervals. These holes seem to be for the small supporting posts which held up the brushwood or grass around the walls of the pit. The walls must have been covered, unless people in this period lived in the pit with only earthen walls, which is difficult to imagine.

It would seem that people would cover the floor or the walls with animal skins, which would have been relatively abundant even if agriculture began at the end of the Geometric Period.

Storage Pits

Traces of storage pits in which the lining was created by the insertion of a bottomless vessel into an excavated cavity were found near the fire pit or in other locations. Although no storage pits were reported for Kungsan no. 5, it appears that two large holes near the fireplace may have been storage pits, although they are not reported as such in the monograph. It seems that one storage pit in each dwelling was always located near the fire pit, and others were located near the exit or the entrance, or near the wall. In the storage pit near the fireplace, cooking utensils and food were kept, while in the others, working tools for fishing and hunting were stored. In Ch'itap-ni no. 1 an inverted vessel was found about 10 cm above the floor surface, while in Kungsan no. 4 a flat stone over the pit seems to have served as a lid.

In those dwelling sites without storage pits or in very small houses large pottery jars probably served as storage facilities. Thus pits served as fixed storage facilities, and jars as movable storage places. The former may not have been very convenient, while the jar forms became more convenient and stable with the advent of flat bottoms.

Among the houses which have been discussed, the earliest appears to be Ch'itap-ni no. 1, which had five storage pits; the latest was T'osong-ni no. 2, which had no storage pits at all. This difference in the number of storage pits may have had some chronological significance.

Length of Use of Dwellings

Among the house sites which we have discussed, only Ch'itap-ni no. 1 and T'osong-ni were abandoned because of fire. The others did not show signs of

burning. The reasons for abandoning houses are not clear; there may have been a custom of moving out to a new residence after sickness or death, as recorded in the *Wei Chih* of the *San Kuo Chih*. On the other hand, people may have moved simply to get into a cleaner environment. From the houses which were not burned, virtually no artifacts were found, and none of the broken vessels were restorable; therefore these dwelling sites were not abandoned abruptly, but were left after preparation. In the house sites which were burned, there were many artifacts. From Ch'itap-ni no. 1 in particular several dozen vessels were found, and many were restorable; in addition, complete saddle querns were found in storage pits or in other locations. Also, from T'osong-ni no. 2 a relatively large number of stone artifacts and restorable ceramics were recovered, suggesting that the sites were abandoned in a hurry.

The author of *Primitive Archaeology*, Yu-ho To, asserts in his book that the ceramics and saddle querns were carefully placed upside down by the inhabitants before they left their pit house. However, it is not clear whether the burning was deliberate or accidental, or whether the burning could have been the result of primitive warfare. It seems that ceramics were placed upside down on the floor when they were not in use; in these two houses, however, some vessels had been left standing upright; also, many usable tools were left in the pits. Therefore it seems that the houses must have been abandoned suddenly. This would suggest an invasion. To states that dwelling sites of the Bronze Age were often burnt; however, from the examples with which we are familiar, few artifacts have been found in them.

Artifacts from House Sites

Ch'itap-ni no. 1 and T'osong-ni no. 2 produced many artifacts. Ch'itap-ni no. 1 in particular produced numerous vessels of various sizes and with various shapes including pointed, round, and flat bottoms. Saddle querns, arrowheads, adzes, net sinkers, spindle whorls, and obsidian flakes were found on the floor.

Of the unburned dwellings, Sopohang no. 3 produced the greatest number of remains from the floor and the fill inside the house; the artifacts recovered might represent the kinds of things which would be left when a house was abandoned. From Ch'itap-ni no. 2, a stone spade and potsherds were found. From the floor surface only ceramics were found, while from the fire pit stone artifacts both complete and incomplete were uncovered. From the other house pits there were virtually no artifacts from the floor surface.

We should also consider the internal distribution of artifacts in house pits. At Ch'itap-ni no. 1, such tools as arrowheads, spears, and adzes, all used in outdoor activities, were recovered from the east side near the entrance area. From the west side, in a semicircle around the fire pit, tools related to indoor activities, such as saddle querns, were located. The interior house space thus was divided according to functions. The reporter stated that in Ch'itap-ni no. 2 the occupants engaged in tool-making activities on the west side of the fire pit, while storage vessels occupied the west and south areas and the living area was to the north. However, no artifacts were found in the hearth area other than a stone hammer and a half-completed stone artifact; therefore it is difficult to believe that people made stone artifacts there.

CONCLUSIONS

It is difficult to draw conclusions because of the lack of data. Many problems remain. What is the relationship between dwelling sites and scattered surface finds or shell middens in locations such as riverbeds and seacoasts? What is the chronological sequence of dwelling forms, or the areal variation in construction details? How many persons lived in each house and how were they expanded or modified over time? These are questions for future research.

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